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How the U.S. Assesses Soviet Weapon Capabilities

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WASHINGTON — The Government periodically issues reports reciting specifications of Soviet weapons with the itemized precision of a hardware catalogue. They are sources of fascination for Soviet-watchers, and they underpin authoritative studies such as the weighty reappraisal of the superpower balance released last week by a Library of Congress expert, John M. Collins.

But occasionally there is a reminder that what we think we know about Soviet weapons, we can rarely claim to know for sure.

The most recent example is the revisionist intelligence assessment of a missile called the SS-19, a six-warhead mainstay of the Soviet missile force. Since the late 1970's, the SS-19 has been classed as a "silo-killer," accurate enough to have high likelihood of destroying American missile silos. Government sources say that a new, classified National Intelligence Estimate, a consensus of intelligence experts, has concluded the missile is less accurate than previously thought, by more than a third. The estimate has led many analysts to conclude that the missile is not, after all, a reliable silo-killer.

The Pentagon's Defense Intelligence Agency vigorously dissented, defending the earlier accuracy estimates. And in any case, downgrading the SS-19 does not substantially diminish the Soviet military threat — the 3,080 independently targetable warheads on the bigger SS-18 missiles are still considered accurate enough to destroy most American targets. Still, the putative accuracy of the SS-19 has helped shape the United States image of the Soviet war machine, contributing to the notion of an American "window of vulnerability," and influencing the 1979 arms talks.

The Duplicitous Factor

One problem with intelligence about Soviet weaponry may be duplicity. The United States has accused the Russians of camouflaging missile sites and encrypting the signals given off by their test missiles, both violations of arms control treaties because they impede verification. In 1979, according to a former Central Intelligence Agency analyst, American satellite photographs of the Kamchatka firing range were said to have caught the Russians digging holes and planting dummy warheads to try to spoof American eavesdroppers. Both sides practice various forms of what's called "strategic deception."

More often, the Soviet-watchers' handicap is the inherent complexity of their detective work.

The estimate of what a Soviet missile can do, for example, is a distillation of hundreds of pieces of data, mostly technical. Reconnaissance satellites take high-resolution photographs of the launch site, perhaps providing information on the size and configuration of the missile. Radars in the Aleutians and elsewhere plot the missile's trajectory in test flight. High-orbit satellites and

RC-135 aircraft based in Alaska record telemetry — the FM signals given off by transmitters Russian scientists attach to monitor their missile's vital parts.

These crucial intercepts may tell eavesdroppers how many warheads were tested, or how steady and reliable the missile is in flight. Ships in the region may help plot where the warheads land.

Once the raw data are gathered, the intelligence agencies begin debating what to make of it all. The course of a missile lobbed into the Pacific may be known with some precision, but it is a matter of educated guesswork what point in the ocean the Russians were aiming for. The agents may have collected dozens of clear signals from the missile in flight, but which frequency was transmitting the fuel flow, and which the steadiness of the gyroscope? "The data base is fairly common," said Jeffrey T. Richelson, author of a new book on United States intelligence. "What can change from agency to agency, and even from person to person, is the analysis."

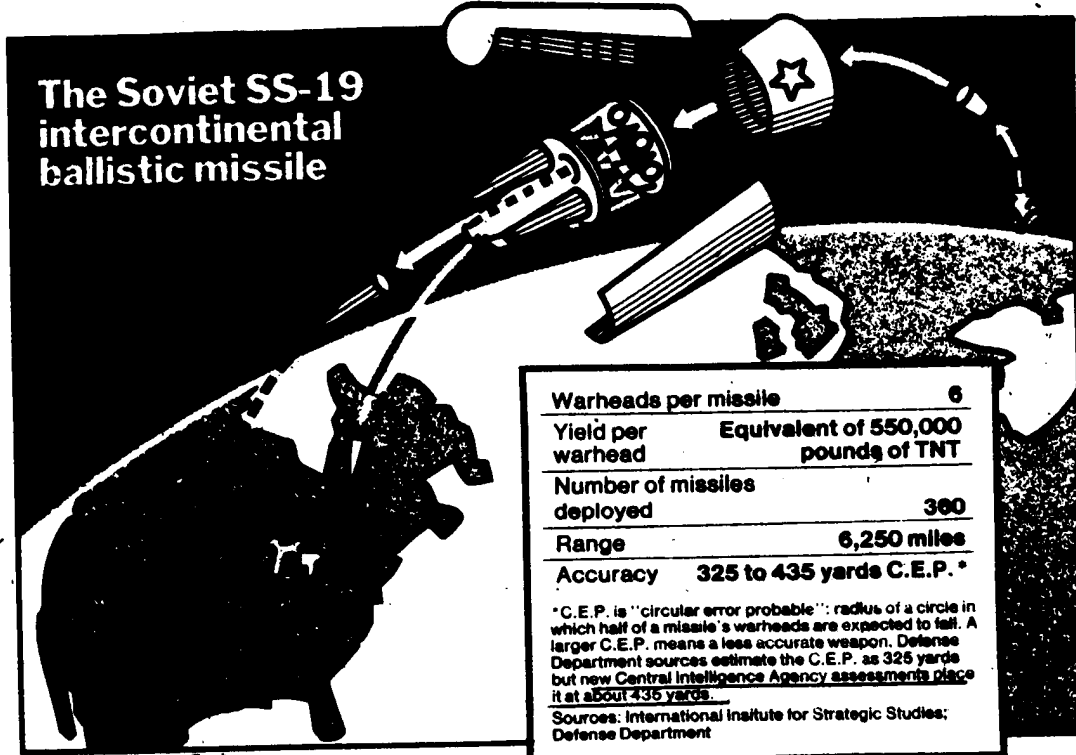
One reason is the analysts make different assumptions. A missile was tested with 10 warheads and 2 decoys. Will the missile be deployed with 10 warheads, or 12? John Prados, author of a book on estimates of Soviet weaponry, argues that even with the great leaps in the sophistication of intelligence-gathering equipment, faulty assumptions about Soviet intentions have often produced misleading intelligence that propelled American policy. For example, exaggerated American estimates of Soviet antimissile defenses in the 1960's spurred the development of multiple-warhead missiles.

One source familiar with the new disagreement over the accuracy of the SS-19 said the earlier estimates had been based on assumptions about how rapidly the missile would improve. The Central Intelligence Agency, this source said, judged from recent telemetry readings that the missile had not improved as much as expected. The Pentagon insisted that the new readings, taken through a fog of Soviet encryption, were too fragmentary to be given much weight.

Although the agencies deny it, many intelligence experts say that the bureaucratic imperative puts its own spin on weaponry estimates. Conservative intelligence buffs contend the C.I.A. tends to put a benign slant on its estimates in order to encourage arms control; the agency is an important player in arms negotiations and verification. Liberals say the Defense Intelligence Agency and the military service intelligence operations tend to justify the military budget by portraying the Russians in the most sinister light.

"Sure, estimates have political input," said one Government intelligence evaluator. "But for the most part, the intelligence community is objective. The problem is simply that we can only know things so well."

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Drawing by Scott MacNeill